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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WO 39237		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IB 03/04341	International filing date (day/month/year) 02.10.2003	Priority date (day/month/year) 03.10.2002	
International Patent Classification (IPC) or both national classification and IPC B60K1/04			
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand  20.10.2003		Date of completion of this report  03.11.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840		Authorized Officer  Nielles, D  Telephone No. +49 30 25901-507 	

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/IB 03/04341**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-16 received on 14.10.2004 with letter of 14.10.2004

**Drawings, Sheets**

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
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International application No. **PCT/IB 03/04341**

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	6-12
	No: Claims	1-5, 13-16
Inventive step (IS)	Yes: Claims	
	No: Claims	1-16
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1 Reference is made to the following documents:

D1: US 2002/060100 A1 (KOMURO NOBUAKI ET AL) 23 May 2002 (2002-05-23)

D2: US-A-5 704 644 (JAGGI DIEGO) 6 January 1998 (1998-01-06)

D3: DE 100 10 398 A (MANNESMANN AG) 13 September 2001 (2001-09-13)

2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 to 5 and 13 to 16 is not new in the sense of Article 33(2) PCT.

2.1 Regarding **claim 1**, D1 (see figures) and D3 (see column 5, lines 56-63 and figure 1) disclose a fuel cell equipped vehicle mounted with a fuel cell (D1: 43; D3: 15) that generates electricity through a reaction of fuel gas and oxidation gas, wherein the fuel cell is disposed in a vehicle passenger room, wherein the fuel cell is disposed on a floor panel in a vehicle passenger room, the floor panel (D1: 45) separating the inside of the vehicle from the outside of the vehicle. Due to the fact that the panel 45 is on the vehicle's floor and it extends along the vehicle interior, it would be considered as a floor panel by the person skilled in the art.

2.2 Regarding **claim 2**, D1 further discloses that the fuel cell is disposed in a fuel cell recess portion of a floor panel.

2.3 Regarding **claim 3**, D1 further discloses that the fuel cell recess portion is so formed as to be interposed between a pair of underfloor reinforcements (see longitudinals of chassis 12).

2.4 Regarding **claim 4**, D1 discloses that the vehicle further comprises a storage battery (44) disposed in the passenger room.

2.5 Regarding **claim 5**, D1 further discloses that the storage battery (44) is disposed in a storage battery recess portion of the floor panel.

- 2.6 Regarding **claim 13**, D1 further discloses that the vehicle comprises a motor (51) for driving at least rear wheels, wherein the electric power of at least one of the fuel cell and the storage battery is supplied to the motor.
- 2.7 Regarding **claim 14**, D1 further discloses that the vehicle comprises fuel cell auxiliaries (for example pump 116 from reforming unit to fuel cell) constituting auxiliaries of the fuel cell, disposed in a vehicle front room.
- 2.8 Regarding **claim 15**, D1 further discloses that the fuel cell auxiliaries are disposed around the fuel cell.
- 2.9 Regarding **claim 16**, D1 further discloses that the fuel cell auxiliaries are disposed below the floor panel.
- 3 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 6 to 12 does not involve an inventive step in the sense of Article 33(3) PCT.
- 3.1 Regarding **claim 6**, its subject-matter differs from D1 in that the storage battery recess portion is disposed in a staged recess portion below front seats such that an upper face of the storage battery substantially coincides with a reference plane of the floor panel. The problem to be solved by the present invention may therefore be regarded as providing a structure that at the same time allows the storage of the battery and improves the resistance of the vehicle structure against side impacts. D2 (see column 1, lines 32 to 55) discloses a storage battery recess portion with the features of claim 6 in order to solve the mentioned objective problem. Therefore, it would be obvious for the person skilled in the art to include a storage battery recess with the features of D2 in the vehicle according to D1 in order to solve said problem. Claim 6 is, therefore, not inventive.
- 3.2 Regarding **claim 7**, D2 (see column 5, lines 35 to 47) further discloses that a fuel cell can be installed below the front seats. From D1 it is obvious that the storage battery can be disposed below the feet of the passengers of the rear seats because it discloses that the storage battery is disposed under the floor and it could be moved

to the back of a vehicle having rear seats, in order to redistribute weight without the need of inventive skills. Therefore, the subject-matter of claim 7 is not inventive.

- 3.3 Regarding **claim 8**, D1 discloses that the fuel cell can be disposed under the floor. In order to redistribute weight (for example to find the optimum center of gravity of the vehicle), the fuel cell could be moved to the back of a vehicle having rear seats without the need of inventive skills. Therefore, the subject-matter of claim 8 is not inventive.
- 3.4 Regarding **claim 9**, the fuel cell and battery of D1 could be moved and oriented with their longitudinal directions coincident with a lateral direction of the vehicle in order to fit them in the recess portion without the need of inventive skills. Therefore, the subject-matter of claim 9 is not inventive.
- 3.5 Regarding **claim 10**, the fuel cell being formed higher than the storage battery is seen as a mere dimensional relation between the fuel cell and the storage battery without any surprising effect. Therefore, it does not involve an inventive step.
- 3.6 Regarding **claim 11**, document D3 further discloses that the vehicle comprises a fuel gas feed unit (17) for supplying the fuel cell with gas, wherein the fuel gas feed unit is disposed below a panel (22) outside the vehicle passenger room. Therefore, the subject-matter of claim 11 differs from D3 in that the panel below which the fuel gas feed unit lays is part of the floor panel. This feature relates to a vehicle body construction option with no unexpected technical effect, and which the skilled practitioner would take at his discretion between a number of equally likely alternatives to construct the vehicle drafted in D3, without the exercise of inventive skill. Therefore, the subject-matter of claim 11 does not involve an inventive step.
- 3.7 Regarding **claim 12**, D3 further discloses that the fuel gas feed unit is disposed behind the rear seats.
- 4 The industrial applicability of **claims 1 to 16** is self-evident (Art. 33(4) PCT).

Enclosure of October 14, 2004

International Application No.: PCT/IB03/04341

Applicant: TOYOTA JIDOSHA KABUSHIKI KAISHA

Our ref.: WO 39237

## **CLAIMS**

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1. A fuel cell equipped vehicle mounted with a fuel cell that generates electricity through a reaction of fuel gas and oxidation gas,

**characterized in that**

5 the fuel cell is disposed on a floor panel in a vehicle passenger room, the floor panel separating the inside of the vehicle from the outside of the vehicle.

2. The fuel cell equipped vehicle according to claim 1,  
10 wherein the fuel cell is disposed in a fuel cell recess portion of the floor panel.

3. The fuel cell equipped vehicle according to claim 2,  
wherein the fuel cell recess portion is so formed as to  
15 be interposed between a pair of underfloor reinforcements.

4. The fuel cell equipped vehicle according to any one of claims 1 to 3, further comprising: a storage battery  
20 for storing electric energy, wherein the storage battery is disposed in the vehicle passenger room.

5. The fuel cell equipped vehicle according to claim 4,  
wherein the storage battery is disposed in a storage  
25 battery recess portion of the floor panel.

6. The fuel cell equipped vehicle according to claim 5,  
wherein the storage battery recess portion is disposed in

a staged recess portion below front seats such that an upper face of the storage battery substantially coincides with a reference plane of the floor panel.

5     7.     The fuel cell equipped vehicle according to any one  
of claims 1 to 5, wherein the fuel cell is disposed below  
the front seats, and the storage battery is disposed at a  
position corresponding to feet of passengers seated in  
rear seats.

10

8.     The fuel cell equipped vehicle according to any one  
of claims 1 to 6, wherein the fuel cell is disposed at a  
position corresponding to feet of passengers seated in  
rear seats, and the storage battery is disposed below  
15 front seats.

15

9.     The fuel cell equipped vehicle according to any one  
of claims 1 to 8, wherein the fuel cell and the storage  
battery are both disposed with their longitudinal  
20 directions being coincident with a lateral direction of  
the vehicle.

20

10.    The fuel cell equipped vehicle according to any one  
of claims 4 to 9, wherein the fuel cell is so formed as  
25 to be higher than the storage battery.

25

11.    The fuel cell equipped vehicle according to any one  
of claims 1 to 10, further comprising: a fuel gas feed  
unit for supplying the fuel cell with fuel gas, wherein  
30 the fuel gas feed unit is disposed below the floor panel  
outside the vehicle passenger room.

30

12.    The fuel cell equipped vehicle according to claim  
11, wherein the fuel gas feed unit is disposed behind the  
35 rear seats.

35



13. The fuel cell equipped vehicle according to any one of claims 1 to 12, further comprising: a motor for driving at least either front wheels or rear wheels,  
5 wherein electric power of at least one of the fuel cell and the storage battery is supplied to the motor.

14. The fuel cell equipped vehicle according to any one of claims 1 to 13, further comprising: fuel cell  
10 auxiliaries constituting auxiliaries of the fuel cell, wherein the fuel cell auxiliaries are disposed in a vehicle front room.

15. The fuel cell equipped vehicle according to any one of claims 1 to 13, further comprising: fuel cell  
15 auxiliaries constituting auxiliaries of the fuel cell, wherein the fuel cell auxiliaries are disposed around the fuel cell.

20 16. The fuel cell equipped vehicle according to any one of claims 1 to 13, further comprising: fuel cell auxiliaries constituting auxiliaries of the fuel cell, wherein the fuel cell auxiliaries are disposed on or below the floor panel.